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10/634,337	08/04/2003	Bo-Yong Chung	50432/DBP/Y35	6765

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EXAMINER
LAO, LUN YI

ART UNIT	PAPER NUMBER
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/634,337	CHUNG ET AL.	
	Examiner	Art Unit	
	LUN-YI LAO	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34,36 and 37* is/are pending in the application.

4a) Of the above claim(s) *35* is/are withdrawn from consideration.

5)☒ Claim(s) *37* is/are allowed.

6)☒ Claim(s) *1-8,11,15-23,25,27-30 and 36* is/are rejected.

7)☒ Claim(s) *9,10,12-14,24,26 and 31-34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/16/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 4-6, 9-10, 22, 24, 31, 34 and 37 are objected to because of the following informalities:

The limitation of "the selection signal" should be changed to -- a selection signal – in claims 4, 9, 22 and 24 since there is no antecedent basis.

The limitation of "a second selection signal" should be changed to -- a first selection signal – in claims 31 and 34, line 3 since there is no a first selection signal in claim 29.

The limitation of "a second selection signal" should be -- changed to a first selection signal – in claim 37, line 18 since there is no a first selection signal in claim 18.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 30 is rejected under 35 U.S.C. 102(e) as being anticipated by Kasai(6,989,826).

Kasai teaches a display device comprising: a display element for displaying a portion of an image in response to a current being applied; a first transistor(214) having a main electrode and a control electrode, and coupled between a voltage source(Vdd) and the display element(220); a capacitor(230) coupled between the main electrode and the control electrode of the first transistor(214), a first switching element(213) coupled between the first transistor(214) and the display element(220) to interrupt the current to the display element (220) while charging the capacitor using at least one of a precharge voltage and a data voltage representative of the image portion(220); and a second switching element(211) coupled to a first selection signal(V1); wherein, when the first selection signal(V1) is activated, the second switching element allows the precharge voltage(Vpre) to be applied to the capacitor(230) for charging and the first switching element (213) is turned off to prevent the current from flowing to the display element(220)(see figures 21(a)-22; column 16, lines 32-68 and column 17, lines 1-24).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-8, 11, 15-23, 25, 27-30 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gwon(CN 1361510) in view of Kasai(6,989,826).

As to claims 1-8, 11, 15-23, 25, 27-30 and 36, Gwon teaches a display panel for image display, the display panel comprising a plurality of data lines(D1-Dy) for transferring a data voltage representing an image signal, a plurality of scan lines(S1-Sz) for transferring a selection signal, and a plurality of pixel circuits, each pixel circuit being coupled to a corresponding the data line(e.g. D1) and two adjacent the scan lines(Sn and Sn-1), each pixel circuit comprising: a display element capable of displaying a portion of an image, the image portion corresponding to a quantity of applied current; a first transistor(M1) having a main electrode and a control electrode; a capacitor(C1) coupled between the main electrode and the control electrode of the first transistor(M1), wherein the first transistor(M1) is capable of generating the applied current in response to voltage between the main electrode and the control electrode; a second transistor(M2) having a control electrode coupled to the control electrode of the first transistor(M1), the second transistor(M2) being configured to operate as a diode; a first switching element(M3) coupled to a main electrode of the second transistor(M2), wherein the first switching element(M3)

transfers the data voltage from the data lines(Dm) to the second transistor(M2) in response to the selection signal from one of the two adjacent scan lines(Sn, Sn-1); a second switching element(M4) for transferring a precharge voltage(Vpre) to the control electrode of the first transistor(M1) in response to a first control signal(Sn-1) before the data voltage is supplied(see figures 4, 11B, 12-15, 17 and abstract).

Gwon fails to disclose a third switch for electrically isolating the first transistor from the display element.

Kasai teaches a display panel comprising a third switching element(213) being turned off in response to a second control signal for electrically isolating a first Transistor(214) from a display element(220)(see figure 4-5(d), 22; column 5, lines 60-68 and column 6, lines 1-11). It would have been obvious to have modified Gwon with the teaching of Kasai, so as to improve the display quality by individually controlling a light emitting elements.

As to claim 2, Gwon as modified teach the third switching element(213) is coupled between the first transistor(214) and the display element(220)(see Kasai's figure 4).

As to claim 3, Gwon as modified teach the two adjacent scan Lines(Sn, Sn-1) comprise a current scan line(Sn) and a previous scan line(Sn-1), and the one of the two adjacent scan lines(Sn, Sn-1) is the current scan line(Sn)(see Gwon's figures 4 and 12).

As to claim 4, Gwon as modified teach the first control signal is the selection signal from the previous scan line(Sn-1).

As to claim 5, Gwon as modified teach the data voltage is applied to the data lines(D1-Dy) after transferring the precharge voltage(Vpre) in response to the first control signal(Sn-1) and before applying the selection signal to the current scan line(Sn)(see figures 11B,12).

As to claim 6, Gwon as modified teach the data voltage in the data lines(D1-Dy) is changed to a desired voltage before the select signal is applied to the current scan line(Sn-1).

As to claims 7 and 8, It would have been obvious to have the second control signal could be the first control signal(Sn-1) since Gwon as modified teach the third switching element is OFF when the second switching element(M4) is ON and the second switching element is PMOST and the third switching element is NMOST(see Gwon's figure 12 and Kasai's figure 4). Therefore, the second control signal could be the first control signal so as to eliminate the control signal lines.

As to claim 11, Gwon as modified teach the third switching element is turned off during a time period of transferring the precharge voltage using the first control signal(Sn-1) and another time period of transferring the data voltage using the selection signal from the current scan line(Sn)(see Gwon's figure 12 and Kasai's figures 4, 12a-12d and 21a-21c; column 11, lines 59-68 and column 12, lines 1-5).

As to claim 15, Gwon as modified teach the first and second switching elements(M1, M2) are transistors of the same type as the first and second transistors(M3, M4, PMOST)(see figure 12).

As to claim 16, Gwon teaches the precharge voltage(ground voltage) is lower than a lowest data voltage from the data lines(D1-Dy)(see Gwon's figures 4-7; claim 10 or Corresponding US Patent No. 7015,884's figures 6-7; claim 9 and column 7, lines 20-45).

As to claim 17, Gwon as modified teaches a data driver(30) coupled to the display panel(10), the data driver(30) being capable of applying the data voltage to the data lines(D1-Dy); and a scan driver(20) coupled to the display panel(10) and scan driver(20) being capable of applying the selection signal to the scan Lines(see figure 4).

As to claims 18, 19, 27, 29 and 30, Gwon teaches a method for driving an image display device coupled to two adjacent scan(Sn, Sn-1) lines the image display device comprising a first transistor(M1) having a main electrode and a control electrode; a capacitor(C1) coupled between the main electrode and the control electrode of the first transistor(M1), the first transistor(M1) being capable of generating a current corresponding to a voltage charged in the capacitor(C1), a second transistor(M2) having a control electrode coupled to the control electrode of the first transistor(M1) and being configured to operate as a diode, and a display element capable of displaying a portion of an image corresponding to a quantity of the current generated by the first transistor(M1), the method comprising: transferring a precharge voltage(Vpre) to the control electrode of the first transistor(M1) in response to a first control signal(Sn-1)during a first time period; transferring a data voltage to the control

electrode of the first transistor(M1) through the second transistor(M2) in response to a selection signal from one of the two adjacent scan lines(Sn-1, Sn) during a second time period; (see figures 4, 11B, 12-15, 17 and abstract).

Gwon fails to disclose a method for interrupting the transfer of data voltage and switching means(claim 27) or first switching element(claims 29 and 30) for electrically isolating the first transistor from a display element during at least one of the first time period and the second time period.

Kasai teaches a display panel comprising switching means or first switching element(213) for interrupting the being turned off in response to a second control signal for electrically isolating a first transistor(214) from a display element(220) during at least one of a first time period(Tc, precharge period) and a second time period(data transferring period(Im) (see figure 4-5(d), 22; column 5, lines 60-68 and column 6, lines 1-11). It would have been obvious to have modified Gwon with the teaching of Kasai, so as to improve the display quality by individually controlling a light emitting elements.

As to claim 20, Gwon as modified teach the two adjacent scan lines(Sn, Sn-1) comprise a current scan line(Sn) and a previous scan line(Sn-1), and the one of the two adjacent scan lines(Sn, Sn-1) is the current scan line(Sn)(see Gwon's figures 4 and 12).

As to claims 21 and 28, Gwon as modified teach the first control signal is the selection signal from the previous scan line(Sn-1).

As to claim 22, Gwon as modified teach the first transistor(M1) is electrically isolated from the display element(OLED) in response to the selection signal from the previous scan line(Sn-1) during the second time period(transferring data voltage period)(see Gwon's figure 12 and Kasai's figure 4, 21a-21c and column 16, lines 32-39).

As to claim 23, Gwon as modified teach the first transistor(M1) is electrically isolated from the display element(OLED) in response to a second control signal(V2) during the second time period(transferring data voltage period)(see Gwon's figure 12 and Kasai's figure 4, 21a-21c and column 16, lines 32-39).

As to claim 25, Gwon as modified teach a method for preventing the precharge voltage(Vpre) and the data voltage from being transferred to the control electrode of the first transistor(M1) between the first and second time periods(precharging period and transferring data voltage period)(see Gwon's figure 12 and Kasai's figure 4, 21a-21c and column 16, lines 32-39).

As to claim 36, Gwon teach a second transistor(M2)(see figure 12).

Allowable Subject Matter

6. Claims 9-10, 12-14, 24, 26 and 31-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claim 37 is allowable since none of cited references teach a display device comprising a second switching element(M3) coupled to a second selection signal(Sn), when the second selection signal is activated, the second switch(M3) allows the data voltage to be applied to the capacitor(Cst) for charging and the first switching element(M5) is turned off to prevent the current from to the display element(OLED)(see figures 4 and 7), with all other limitation cited in claim 37.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lun-yi Lao whose telephone number is 571-272-7671. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 20, 2006

Lun-yi Lao
Primary Examine